Abstract

Image processing is always being a research field for the researcher. The Image denoising is one of the important areas of image processing. There are several methods for image denoising in spatial and transform domain. The current trends of the image denoising research are the evolution of mixed domain methods. In this paper, a mixed domain image denoising method is proposed, which is based on the wavelet transform, median filter and nonlinear diffusion. The wavelet transform is used in this paper to convert the spatial domain image to wavelet domain coefficients. The detail component are removed due to the most of the image part is in approximation part. The approximation coefficient is then filtering by nonlinear diffusion and median filter separately. The peak signal to noise ratio (PSNR), root mean square error (RMSE) and mean structural similarity index matrix (MSSIM) are used as the performance parameter. The different wavelet families are used to optimize the performance of denoising. The Coiflet2 wavelet and diffusion algorithm are giving the best denoising result.
- Forward and Backward Diffusion processes for adaptive image enhancement and denoising IEEE transactions on image processing, vol11, no. 7 July 2002.

**Index Terms**

Computer Science  
Image Processing

**Keywords**

Wavelet Transform  
Perona and Malik (PM2)  
PSNR  
RMSE  
MSSIM etc.